

STATE OF CALIFORNIA

AN ASSESSMENT

OF

EMERGENCY MEDICAL SERVICES

AUGUST 23-26, 1999

National Highway Traffic
Safety Administration
Technical Assistance Team

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BACKGROUND

Injury is the leading cause of death for persons in the age group 1 through 35 as well as the most common cause of hospitalizations for persons under age 40. The financial cost of injuries are staggering: injuries cost billions of dollars in health care and social support resources. In 1991, for example, the lifetime costs of all injuries were estimated at \$137 billion annually. These estimates do not include the emotional burden resulting from the loss of a child or loved one or the toll of severe disability on the injured person and his or her family. Each year, over 40,000 people lose their lives on our nation's roads, and approximately 56 percent of those fatalities occur on rural highways. The National Highway Traffic Safety Administration (NHTSA) is charged with reducing accidental injury on the nation's highways. NHTSA has determined that it can best use its limited resources if its efforts are focused on assisting States with the development of integrated emergency medical services programs that include comprehensive systems of trauma care.

To accomplish this goal, NHTSA has developed a Technical Assistance Team (TAT) approach that permits states to utilize highway safety funds to support the technical evaluation of existing and proposed emergency medical services programs. NHTSA serves as a facilitator by assembling a team of technical experts who have demonstrated expertise in emergency medical services development and implementation. These experts have demonstrated leadership and expertise through involvement in national organizations committed to the improvement of emergency medical services throughout the country. Selection to the Technical Assistance Team is also based on experience in special areas identified by the requesting State. Examples of specialized expertise include experience in the development of legislative proposals, data gathering systems, and trauma systems. Experience in similar geographic and demographic situations, such as rural areas, coupled with knowledge in providing emergency medical services in urban populations is essential.

The Emergency Medical Services Program, in concert with the Office of Traffic Safety, requested the assistance of NHTSA. NHTSA agreed to utilize its technical assistance program to provide a technical evaluation of the STATE EMS Program. NHTSA developed a format whereby the STATE Emergency Medical Services provided comprehensive briefings on their EMS system based on an outline developed by the Technical Assistance Team.

The Technical Assistance Team assembled in Los Angeles and Sacramento, California, on August 23-26, 1999. For the first two days and a half, over 35 presenters representing various components of the EMS system in the State of California, provided in-depth briefings on emergency medical services and trauma care in California. Topics for review and discussion included the following:

General Emergency Medical Services Overview

System Components:

- Regulation and Policy
- Resource Management
- Human Resources and Training
- Transportation
- Facilities
- Communications
- Trauma Systems
- Public Information and Education
- Medical Direction
- Evaluation
- Disaster Systems

The forum of presentation and discussion allowed the Technical Assistance Team the opportunity to ask questions regarding the emergency medical services system, clarify any issues identified in the briefing materials provided earlier, and develop a clear understanding of how emergency medical services function throughout California. The team spent considerable time with each presenter so that they could review the status for each topic.

Following the briefings by presenters from California EMS, public and private sector providers, and members of the medical community, the Technical Assistance Team sequestered to evaluate the current EMS system as presented and to develop a set of recommendations for system improvements.

When reviewing this report, please note the ***bold italics*** represent priority recommendations identified by the Technical Assistance Team.

The statements made in this report are based on the input received. Established standards and the combined experience of the team members were applied to the information gathered. All team members agree with the recommendations as presented.

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ACKNOWLEDGMENTS

The Technical Assistance Team would like to acknowledge the California Office of Traffic Safety and the California Emergency Medical Services Authority, for their support in conducting this assessment.

The Team would like to thank all the presenters for being candid and open regarding the status of emergency medical services in California. Each presenter was responsive to the questions posed by the Technical Assistance Team which aided the reviewers in their evaluation.

Special recognition should be made regarding the extraordinary efforts taken by Richard Watson, EMSA Interim Director, and his staff, and the briefing participants for their well prepared and forthright presentations. In addition, the team applauds the well organized, comprehensive briefing packages sent to the team members in preparation for the assessment. Special thanks also to Dan Smiley and Michele Rains, of the Emergency Medical Services Authority, for providing special assistance to the Technical Assistance Team, and to the process.

INTRODUCTION

As goes California, so goes America; as goes America, so goes the world.

California traditionally has been in the vanguard of change; it is indeed perceived by most Americans as the only true bell-weather state. Many of the trends that proceed on to change the entire world began in California. One has only to look at the biotechnology industry, art and design, high-tech and computer electronics and most recently the Internet technologies - that all began in California. These technologies have in the past - and will in the future - change the way the entire world works, communicates and indeed lives.

This trend setting is also exemplified within the health care industry and EMS. Prehospital advanced life support and the development of regional trauma programs together with the data that first demonstrated their effectiveness in reducing preventable death all had their start in California. And where would the public's knowledge of EMS be without the TV show "Emergency" and the expertise of Johnny and Roy. The shows "911", "Paramedics" and "Trauma Center" continue the tradition showcasing California cities. California has not only demonstrated innovative leadership in establishing such programs, it has also educated the public as to what EMS is and what they should strive for in their own communities.

Being the vanguard of change comes at a price. Many of the problems that are being faced by California in these times of turbulent change in the health care delivery system have yet to be faced by other regions. Lessons can best be learned by experience. Most are far behind the Golden State in the on-going health care revolution. The interaction of EMS with managed care systems, the challenge of delivering emergency care to the rapid influx of emergency patients when hospitals are on ambulance diversion and operating at occupancy with high acuity patients - these are situations where there are no known answers.

California will be challenged to innovate and develop new solutions to these new problems. The State is to be commended by the initiation of the Vision and the development of the document describing the "Shaping of the Future of EMS in California". This creative and collaborative approach brought all partners together to plan and develop a better tomorrow as California approaches a new millenium. As California proceeds from planning to implementation, the results will not only serve the next generation of Californians but again serve as an example of the leadership capabilities of this unique State. If the past is any guide, California will again provide innovative solutions to seemingly intractable problems to improve all of our lives.

The NHTSA team would like to thank all who contributed and gave testimony to the Technical Assistance Team (TAT) and wish the state success in their efforts to establish a comprehensive statewide EMS system.

CALIFORNIA EMERGENCY MEDICAL SERVICES

The Technical Assistance Team (TAT) reviewed ten essential components of an EMS system. For each component reviewed, the TAT identified key EMS issues or standards, assessed the status, and made recommendations for necessary changes. At the request of the state, the TAT also reviewed and made recommendations regarding disaster systems.

A. REGULATION AND POLICY

Standard

To provide a quality, effective system of emergency medical care, each EMS system must have in place comprehensive enabling legislation with provision for a lead EMS agency. This agency has the authority to plan and implement an effective EMS system, and to promulgate appropriate rules and regulations for each recognized component of the EMS system (authority for statewide coordination; standardized treatment, transport, communication and evaluation, including licensure of out-of-hospital services and establishment of medical control; designation of specialty care centers; PIER programs). There is a consistent, established funding source to adequately support the activities of the lead agency and other essential resources which are necessary to carry out the legislative mandate. The lead agency operates under a single, clear management structure for planning and policy setting, but strives to achieve consensus among EMS constituency groups in formulating public policy, procedures and protocols. The role of any local/regional EMS agencies or councils who are charged with implementing EMS policies is clearly established, as well as their relationship to the lead agency. Supportive management elements for planning and developing effective statewide EMS systems include the presence of a formal state EMS Medical Director, a Medical Advisory Committee for review of EMS medical care issues and state EMS Advisory Committee (or Board). The EMS Advisory Committee has a clear mission, specified authority and representative membership from all disciplines involved in the implementation of EMS systems.

Status

California was an early leader in emergency medical services system development. Since the inception of EMS in California, local agencies have played a pivotal role in EMS system development. While county-by-county regulation of EMS evolved, there was frequently no inter-county or statewide coordination. Currently, the Local EMS Agency (LEMSA) serves as the lead agency for the EMS system at the local level and is responsible for coordinating system participants within its jurisdiction. This decentralized approach has historically enabled the development of local EMS systems that have addressed local needs and spawned many of California's innovative EMS programs.

In 1980, the state Emergency Medical Services Authority (EMSA) was created. With the early emphasis on local EMS system regulation, it has been difficult to establish a cohesive, statewide EMS system.

Jurisdictional disputes regarding the authority of cities and counties (e.g., San Bernardino, California Supreme Court decision) and public-private disputes have further complicated EMS system implementation. The EMSA and its many partners are to be commended for undertaking the Vision process. “Shaping the Future of EMS in California” is a significant collaborative effort which will guide California’s EMS system into the next millennium. The major EMS constituents have voluntarily agreed to a temporary moratorium on the introduction of EMS legislation to allow completion of the vision process. Director Watson is commended for his outstanding efforts on improving the dialogue among EMS system stakeholders.

There is comprehensive state EMS legislation including an excellent Emergency Medical Services for Children component. However, the legislation frequently does not enable uniform statewide standards or comprehensive system implementation. Consequently, the current regulations and policies are lacking in statewide uniformity, consistency and enforcement. There are neither appropriate rules and regulations for each component of the emergency medical services system nor system-wide standards for treatment, transport, communications or interfacility transport. In some instances (e.g., standards for EMT-I testing), the state may have sufficient legislative authority to adopt uniform standards, but may not have done so.

The formal, legal relationship between the EMS Authority and the LEMSA is not always clearly defined and understandable to all of the participants. In addition, the actions and responsibilities of LEMSAs apparently vary considerably from LEMSA to LEMSA. There is no clearly defined system of checks and balances between the LEMSA and the EMSA.

While there are suggested guidelines, there is no statewide licensure of out-of-hospital emergency medical services providers. There is no assurance that all ambulance services meet minimum standards throughout the state. While there are minimum standards for private ambulance vehicles, these standards are not applicable to public ambulance services. State ambulance and response guidelines are not consistently included in LEMSA provider contracts. Neither is it assured that LEMSAs consistently enforce state guidelines nor contractual standards.

There is reasonable uniformity in the certification of EMT-Paramedics which includes a standard course of instruction and the National Registry of EMTs examination. However, there is no statewide consistency for other levels of certification. LEMSAs and their medical director may specify examinations for EMT-Is and EMT-IIIs; this varies considerably from LEMSA to LEMSA. There is no assurance that an EMT-I certified by one LEMSA is equivalent to an EMT-I certified by another LEMSA. There is considerable variability of disciplinary procedures and due process for EMT-Is and EMT-IIIs throughout the state.

In an effort to establish more statewide uniformity, the state has established guidelines. However, these guidelines do not have the force of regulations and may not have a significant impact in establishing statewide standards. LEMSAs have not consistently adopted and applied these guidelines. Furthermore, the role of the LEMSA in guideline management may be misunderstood by local EMS providers.

The State EMS Commission, composed of 16 members, is the primary advisory body to the EMSA. The Commission also approves the EMS Authority's regulations and serves as an appeal body for disagreements with the Authority's actions on local EMS plans and trauma plans. The Commission may not be totally representative of the EMS constituency.

There is currently no state EMS Medical Director; however, the EMS Authority has contracted with two EMS physicians to provide medical input and to assist the Authority with disciplinary issues. In addition, a committee of the EMS Medical Directors Association of California (EMDAC) provides limited advice to the Authority relating to Paramedic scope of practice.

There is an absence of confidentiality and non-discoverability legal protection for much of the emergency medical services system. However, there is a liability protection statute.

The state and local EMS system has fragile funding support. The state EMS Authority is predominantly supported by state general fund and by the federal Preventive Health and Health Services Block grant, the continuation of which may be tentative. Fortunately, they have successfully applied for and received several competitive grants including Emergency Medical Services for Children (EMSC).

While the EMSA provides some level of funding for the multi-county EMS regions, funding for single county LEMSAs is even more tenuous. They may receive funding from up to 12 different sources including the county, tobacco tax dollars and motor vehicle violations. LEMSAs' share of tobacco tax revenue has been consistently declining as have their moving traffic violation dollars. On the other hand, some LEMSAs have secured consistent local funding.

Recommendations

In implementing the following recommendations, the EMSA and the LEMSAs should continue to define methods of improved cooperation and collaboration and should clearly specify these relationships in writing or by regulations.

- , **The EMS Authority should aggressively pursue consistent statewide standardization and coordination of treatment, transport, communications and evaluation. While there should be uniform, minimum standards, there should also be reasonable provisions for local flexibility in exceeding those standards.**
- , **The EMS Authority, in collaboration with its EMS partners, should develop a state EMS plan.**
- , **The EMS Authority and counties should pursue adequate and stable funding for local EMS agencies and for the state EMS Authority for administration, system planning and evaluation activities.**

- , **There should be consistent and uniformly enforced regulations (not guidelines) for EMS provider service licensing, facility designation, EMS personnel licensing and medical direction.**
- , **There should be uniform statewide licensing of all levels of EMS services (providers) including public, private and air medical services. This should include a process for license suspension, revocation or other disciplinary actions.**
- , **There should be uniform and consistent statewide licensing of all EMS prehospital personnel. This should include a process for license suspension, revocation or other disciplinary actions.**
- , EMSA should promulgate regulations that establish Emergency Medical Dispatcher certification/licensure.
- , The EMS Authority, in collaboration with all appropriate EMS stakeholders, should continue the Vision process.
- , **The EMS Authority should establish performance standards for LEMSAs and should develop a system for monitoring and evaluating the LEMSA including the provision of technical assistance in areas needing improvement.**
- , The EMS Authority should convene the Interdepartmental Committee on Emergency Medical Services (1797.132) to assure improved coordination and collaboration with other departments which have authority over other components of the EMS system such as hospital licensing standards, California Children's Services and Injury Prevention.
- , The EMS Authority should write, and help shepherd through the legislative process, legislation to assure confidentiality and non-discoverability of EMS and trauma records, and EMS provider protection while participating in EMS Quality Improvement (QI) activities.
- , The EMS Authority, in collaboration with the EMS Commission, should re-evaluate which issues should be addressed by guidelines and which areas should be addressed by regulations.
- , The EMS Authority, in collaboration with the EMS Commission, should define the role of the EMS Authority regarding inter-facility transfers on a statewide basis.
- , **EMSA should acquire a formal state EMS medical director.**

B. RESOURCE MANAGEMENT

Standard

Central coordination and current knowledge (identification and categorization) of system resources is essential to maintain a coordinated response and appropriate resource utilization within an effective EMS system. A comprehensive State EMS plan exists which is based on a statewide resource assessment and updated as necessary to guide EMS system activities. A central statewide data collection (or management information) system is in place that can properly monitor the utilization of EMS resources; data is available for timely determination of the exact quantity, quality, distribution and utilization of resources. The lead agency is adequately staffed to carry out central coordination activities and technical assistance. There is a program to support recruitment and retention of EMS personnel, including volunteers.

Status

The Vision Conference Summary, “Shaping the Future of EMS in California”, sets the foundation to achieve optimal resource management conditions for EMS in California. This document embodies the findings of the first generation of an EMS system assessment based on primary stakeholders’ perspectives. The process which led to the development of the Vision document is a meritorious accomplishment given the diverse interests, history and consternation harbored by some participants. The collective ability of all of these system advocates to set aside past conflict in an effort to engage this critical process is commendable.

Nonetheless, the absence of a comprehensive state EMS plan is more evident as a result of the Vision process than ever before. Text in the Vision statement and testimony during the assessment indicates a commitment to the next phases of plan development; less evident is the extent to which the currently required LEMSA planning will be congruent and complementary to this process. No centralized or centrally retrievable, reliable resource assessment exists at a state level, although this may exist in varying designs and completeness among individual LEMSAs.

The EMSA has a strong, well exercised asset to accomplish most resource management related tasks through its effective partnership with LEMSAs. “Inter LEMSA” communications for the purposes of sharing resource related information and mechanisms for assessing and evaluating resources is accomplished both through an established association and informal means. Other interagency communications about resources could be demonstrably improved through the creation of partnerships between the EMSA and other state agencies with a regulatory or response role related to EMS.

A persistent vacancy in the EMSA Director position is another pervasive concern in this component. The likelihood of long term success of the state EMS planning efforts or any other meaningful EMS system advancements is threatened until this compromise is corrected. Although the system has been very fortunate given the capabilities and accomplishments of the Interim and Deputy Directors, the overall success for the next steps for the system is largely dependent on the presence of a Director.

Availability and analysis of data related to the quantities, qualities, distribution, and utilization of all resources is an apparent weakness in the California EMS system. These data are lacking across all domains, not just patient care, and that which has been collected locally is not unified by a common statewide minimum standard or definitions.

Specific areas in which adequate resource management tactics are not evident include the identification and formation of recruitment and retention programs, the poison control system design, consideration for the scope of practice for EMT-Is, and adequacy of the distribution of EMS system resources.

EMSA, during the past five years, has made a concerted effort to improve emergency medical services for children including an excellent working relationship with the pediatric EMS community. A highly successful annual EMSC conference has been conducted each year and is well attended by EMS providers. Pediatric components are well established in many of the system components, and LEMSAs are required to address pediatric issues in their local plans.

Recommendations

- , **Pursue a EMSA Director appointment for sustained, qualified leadership with both administrative and medical expertise.**
- , **Acquire a formal State EMS Medical Director.**
- , **Proceed with the development of a comprehensive statewide EMS plan.**
- , Develop and implement more definitive EMSA review criteria and process for LEMSAs plans and other requests.
- , Develop a resource assessment process with and through the LEMSAs.
- , Increase the availability of technical assistance to existing agencies, counties, and cities through EMSA as specified in current law.
- , **Establish an Interdepartmental Committee on Emergency Medical Services (1797.132) to assure improved coordination and collaboration with other departments which have authority over other components of the EMS system such as hospital licensing standards, California Children's Services and Injury Prevention.**
- , **Continue to improve EMSA-LEMSA and inter- LEMSAs communications.**
- , Establish a comprehensive statewide EMS and trauma data collection and EMS system resource information system.
- , Develop a formal method to orient new EMSA staff to EMS; where possible, establish

appropriate EMS experience and expertise as a hiring requirement.

- , Assess the types and locations of EMS recruitment and retention needs, and design interventions for problems identified.
- , Evaluate continuing needs and improvement to service delivery and efficiency of the current poison control arrangement.

C. HUMAN RESOURCES AND TRAINING

Standard

EMS personnel can perform their mission only if adequately trained and available in sufficient numbers throughout the State. The State EMS lead agency has a mechanism to assess current human resource needs and establish a comprehensive plan for stable and consistent EMS training programs with effective local and regional support. At a minimum, all transporting out-of-hospital emergency medical care personnel are trained to the EMT-Basic level, and out-of-hospital training programs utilize a standardized curriculum for each level of EMS personnel (including EMS dispatchers). EMS training programs and instructors are routinely monitored, instructors meet certain requirements, the curriculum is standardized throughout the State, and valid and reliable testing procedures are utilized. In addition, the State lead agency has standardized, consistent policies and procedures for certification (and re-certification) of personnel, including standards for basic and advanced level providers, as well as instructor certification. The lead agency ensures that EMS personnel have access to specialty courses such as ACLS, PALS, BTLIS, PHTLS, ATLS, etc., and a system of critical incident stress management has been implemented.

Status

Both the EMSA and the LEMSAs manage the personnel and certification issues for which they have authority for a daunting volume of personnel. An inconsistent, if not dysconjugate, distribution of roles between the EMSA and LEMSAs exist depending on the source or level of training or the level of certification/licensure being sought. The greatest diversity can be found at the EMT-I level, wherein training and ultimately certification/licensure can occur through literally hundreds of combinations of training standards and certification processes and agencies. Most notably, investigation and disciplinary processes for EMT-Is and EMT-IIs varies among LEMSAs.

In the case of paramedic training, 26 various organizations which provide it have formed an organization through which they communicate. LEMSAs conduct actual program approval in accordance with state regulations. LEMSAs also assess human resource needs and endeavor to assure the availability of training resources, but the extent to which recruitment and retention issues are contributing factors is not evident.

The availability of human resources were overshadowed by concerns about inconsistency in training, certification/licensure, accreditation practices, and tracking of applicant information. This inconsistency exists among levels of training, across LEMSAs, and between EMSA and the LEMSAs. Whether or not, or the manner in which, training programs and their instructors are monitored was not clear. Testing methods vary from reliable, validated exam processes to allowing training institutions to conduct in-house tests. A notable strength is that all curricula and training standards for EMT-Is, EMT-IIs, and paramedics are set in regulations. Furthermore, the National Registry examination is the exclusive examination used as the basis for licensure for paramedics. All paramedic level training programs must be accredited by the Joint Review Committee on Educational Programs by 2004 to continue functioning.

Critical Incident Stress Management and nationally standardized courses such as ACLS, PHTLS, and PALS are resources which are in place through the LEMSAs and the local EMS providers. It is unclear whether the adequacy or availability of these resources has been externally assessed. The absence of a standardized curriculum and lack of certification/licensure for emergency medical dispatchers was also a noted deficiency.

The EMSAs' leadership in and promotion of training requirements for non-traditional providers such as bus drivers, child care workers, life guards, and law enforcement officers is commendable.

Recommendations

- , **The EMSA should require the use of US Department of Transportation (USDOT) National Standard Curricula at all levels.**
- , **The EMSA should develop and introduce uniform and consistent statewide certification/licensure of *all* prehospital personnel.**
- , **The EMSA should standardize EMT-I and EMT-II certification/licensure examination standards.**
- , The EMSA and LEMSAs should consider adoption of the National Registry as the EMT-I and EMT-IIs examination.
- , **EMSA should promulgate regulations establishing Emergency Medical Dispatcher as a level of EMS certification/licensure.**
- , The EMSA and LEMSAs should secure funding commensurate with the training, certification/licensure, and disciplinary roles for both EMSA and LEMSAs.

D. TRANSPORTATION

Standard

Safe, reliable ambulance transportation is a critical component of an effective EMS system. The transportation component of the State EMS plan includes provisions for uniform coverage, including a protocol for air medical dispatch and a mutual aid plan. This plan is based on a current, formal needs assessment of transportation resources, including the placement and deployment of all out-of-hospital emergency medical care transport services. There is an identified ambulance placement or response unit strategy, based on patient need and optimal response times. The lead agency has a mechanism for routine evaluation of transport services and the need for modifications, upgrades or improvements based on changes in the environment (i.e., population density). Statewide, uniform standards exist for inspection and licensure of all modes of transport (ground, air, water) as well as minimum care levels for all transport services (minimum staffing and credentialing). All out-of-hospital emergency medical care transport services are subject to routine, standardized inspections, as well as unannounced “spot checks” to maintain a constant state of readiness throughout the State. There is a program for the training and certification of emergency vehicle operators.

Status

There is currently no statewide EMS plan, but there are state transportation guidelines for the LEMSAs to incorporate into their local EMS plans. These guidelines outline minimum requirements for establishing service areas, monitoring EMS services, setting response times, coordinating air ambulances, and providing for inter-county agreements. The actual statewide compliance by providers with these transportation guidelines is unknown since the LEMSAs are not subject to formal evaluation by the EMSA. Based on information presented during the assessment, there appears to be considerable variation between LEMSAs in their approach to evaluating emergency transportation needs and services and enforcing compliance with local plans. Overall statewide compliance with standards and guidelines is therefore unknown.

EMS mutual aid plans are developed locally and appear to vary among LEMSAs.

There is no statewide licensing or inspection process that uniformly applies to all public and private EMS services. Multiple agencies (EMSA, CHP, LEMSAs and others) are responsible for developing and ensuring compliance with laws, regulations, standards and guidelines pertaining to these services. This fragmentation of authority appears to result in a lack of coordination of regulatory oversight. Spot inspections of ambulances are authorized under law, but are not conducted.

There are no statewide requirements for emergency vehicle operator training or certification.

There is no statewide air medical triage protocol and each LEMSA is required to develop its own. Air medical coverage appears to vary considerably from areas of the state with significant overlap of resources in some areas and limited access in others. In areas with overlapping services, there is

significant competition between providers, and controversies as to the appropriate use of services (e.g., air rescue versus air ambulance) which may be a result of local EMS policy or the absence thereof.

Recommendations

- , **Develop and implement a comprehensive EMS plan that includes appropriate transportation elements including those for air medical services.**
- , Develop and implement a statewide air medical activation protocol.
- , Develop and implement a standardized statewide mutual aid plan for EMS.
- , The EMSA should develop a statewide evaluation through the LEMSAs, of compliance with the transportation elements of the EMS plan. This evaluation should be repeated at appropriate intervals.
- , **Develop and implement uniform statewide licensing and inspection standards and procedures that apply to all EMS services both public and private.**

E. FACILITIES

Standard

It is imperative that the seriously ill patient be delivered in a timely manner to the closest appropriate facility. The lead agency has a system for categorizing the functional capabilities of all individual health care facilities that receive patients from the out-of-hospital emergency medical care setting. This determination should be free of political considerations, is updated on an annual basis and encompasses both stabilization and definitive care. There is a process for verification of the categorizations (i.e., on-site review). This information is disseminated to EMS providers so that the capabilities of the facilities are known in advance and appropriate primary and secondary transport decisions can be made. The lead agency also develops and implements out-of-hospital emergency medical care triage and destination policies, as well as protocols for specialty care patients (such as severe trauma, burns, spinal cord injuries and pediatric emergencies) based on the functional assessment of facilities. Criteria are identified to guide interfacility transport of specialty care patients to the appropriate facilities. Diversion policies are developed and utilized to match system resources with patient needs; standards are clearly identified for placing a facility on bypass or diverting an ambulance to another facility. The lead agency has a method for monitoring if patients are directed to appropriate facilities.

Status

The assessment of functional capability of the individual health care facilities appears to be fragmented among several state agencies and the LEMSA. The State Department of Health Services has regulatory authority for emergency departments that are categorized as standby, basic or comprehensive. These licensing criteria are approximately thirty years old. Some hospitals are downgrading their capabilities and in several instances emergency facilities are closing and the existing emergency patients are being transferred to a smaller number of emergency facilities that are becoming increasingly overwhelmed. Emergency diversion is an important concern. When patients are taken to these overloaded facilities the ambulance may not be able to transfer the patient to hospital care which delays the ambulance crew's return to service. There is decreasing availability of on-call specialists and hospital occupancy contributes to emergency department ambulance diversion status. Increasing difficulty with compliance with Federal EMTALA laws concerning the appropriate emergency management and stabilization of patients is the experience of many California emergency physicians. A task force involving the California Chapter of the American College of Emergency Physicians, the California Medical Association and the California Hospital Association has been formed and has drafted recommendations. Criteria for diversion are developed at the LEMSA level and do not appear to be consistent statewide. It is unclear if hospitals within a particular LEMSA region consistently abide by these diversion policies.

The trauma regulations are comprehensive and have recently been updated. These new regulations also contain language concerning pediatric trauma centers. There are other regulations pertaining to Pediatric Intensive Care Units (PICUs) that have been promulgated by California Children Services. Criteria for burn and spinal cord centers are under development and there is consideration for centers for cardiac and acute stroke care. At this time there is no annual assessment of these centers.

There are no standards for non-hospital receiving centers. There are no statewide triage and destination policies; however, these are developed at the LEMSA level. There are no criteria developed to guide interfacility transport of patients. The EMSA has no clear mechanism to monitor if patients are directed to appropriate facilities. The availability of helipads at several key facilities has been compromised by citizen concerns with little or no regard for patient needs.

Recommendations

- , **EMSA should work with the Interdepartmental Committee on EMS to ensure coordination of regulatory function and oversight of such components as emergency department categorization and pediatric intensive care requirements. This coordination should include a mechanism for updates of both standards and regulations on a regular basis.**
- , **Interdepartmental Committee on EMS should meet with the representatives of the Emergency Medical Services Administrators Association of California (EMSAAC) and the ADHOC task force attempting to address the concern of emergency department overcrowding, ambulance diversion and helipad availability. The development of ambulance diversion guidelines should be considered.**
- , The LEMSA should continually monitor the magnitude of emergency diversion and report to EMSA on a regular basis.
- , EMSA should develop statewide protocols for the triage and transfer of burns (both adult and pediatric) and spinal cord injuries.
- , **EMSA should develop guidelines for interfacility transfer of specialty care patients.**
- , EMSA should establish a process to ensure statewide compliance with developed triage and transfer policies.

F. COMMUNICATIONS

Standard

A reliable communications system is an essential component of an overall EMS system. The lead agency is responsible for central coordination of EMS communications (or works closely with another single agency that performs this function) and the state EMS plan contains a component for comprehensive EMS communications. The public can access the EMS system with a single, universal emergency phone number, such as 9-1-1 (or preferably Enhanced 9-1-1), and the communications system provides for prioritized dispatch. There is a common, statewide radio system that allows for direct communication between all providers (dispatch to ambulance communication, ambulance to ambulance, ambulance to hospital, and hospital to hospital communications) to ensure that receiving facilities are ready and able to accept patients. Minimum standards for dispatch centers are established, including protocols to ensure uniform dispatch and standards for dispatcher training and certification. There is an established mechanism for monitoring the quality of the communication system, including the age and reliability of equipment.

Status

There is a statewide 9-1-1 system; most of the state has access to enhanced land line 9-1-1. 9-1-1 calls are answered by over 350 PSAPs. A state 9-1-1 office guides 9-1-1 system implementation which is funded via a telephone line surcharge. The California Highway Patrol answers all wireless 9-1-1 calls. The dramatic increase in the number of cellular 9-1-1 calls is taxing the resources of the CHP. The CHP is working closely with a variety of manufacturers of Mayday technology for the automatic reporting of crash information. The CHP dispatchers do not have EMD training although their geographic coverage area and population served is enormous.

There is no state EMS communications plan. A California State EMS Communications report has been drafted, but has not yet been circulated to EMS provider agencies for review and comment. Currently, the EMS authority has one position responsible for EMD programs and for communications technical assistance.

A variety of EMS communications systems are used (VHF, UHF, 800 MHz), but much of the equipment is now outdated and in need of replacement. There is no statewide public safety communications system or frequency allocation plan. This causes enormous problems with interagency operability.

The Department of General Services (DGS) telecommunications office is currently working on a statewide public safety communications system plan which is predominantly oriented toward state agencies. The EMSA personnel have served as ad-hoc members of this committee, but they are quite concerned about the potential cost if EMS were to participate in system implementation. More importantly, this plan does not address EMS communications.

There are no Emergency Medical Dispatch standards, but regulations are currently under development

by the EMS Authority. The Police Officers Standards of Training (POST) requires that law enforcement dispatchers have only 4 hours of EMS Dispatcher training.

Recommendations

- , **The EMSA should coordinate closely with the Department of General Services in the planning and implementation of a statewide public safety agency telecommunications system and should make a concerted effort to assure the inclusion of emergency medical services in that plan.**
- , **The EMSA should continue to assess EMS communications needs, do EMS communications planning, provide technical assistance to LEMSAs and attempt to secure funding to improve the state EMS communications infrastructure. Ideally, this should be done in coordination with the DGS planning.**
- , **EMSA should complete, disseminate and implement a state EMS communications plan.**
- , **Emergency Medical Dispatch should become an EMS personnel certification/licensure level and should be required of EMS dispatch centers.**
- , **Any PSAP dispatching emergency medical services calls directly or interacting with callers reporting EMS incidents should be required to take EMD training.**
- , EMSA should work to increase the availability of EMD training in the basic dispatcher training programs.
- , **California Highway Patrol dispatchers should be trained in Emergency Medical Dispatch.**
- , There should be a statewide, interagency communications channel.
- , There should be a statewide medical coordination channel.
- , EMS communications frequency use should be tracked through EMS agency licensing and requirements for access to state interagency communication channels should be required in state licensure regulations.
- , Any introduction of a 3-1-1 type access number must have policy and procedures complimentary to current 9-1-1 communications centers.
- , The California Highway Patrol should continue working with new MAYDAY and other technologies and should recognize the potential opportunities to communicate valuable pre-arrival information to emergency medical services providers.

- , The EMSA should be integrally involved with the planning for MAYDAY systems and other intelligent transportation system modalities.
- , EMSA and others should support technological and regulatory changes that improve the processing of wireless calls to 9-1-1 including automatic number identification (ANI), automatic location information (ALI) and selective routing to the most appropriate PSAP.

G. PUBLIC INFORMATION, EDUCATION AND PREVENTION

Standard

To effectively serve the public, each State must develop and implement an EMS public information and education (PI&E) program. The PI&E component of the State EMS plan ensures that consistent, structured PI&E programs are in place that enhance the public's knowledge of the EMS system, support appropriate EMS system access, demonstrate essential self-help and appropriate bystander care actions, and encourage injury prevention. The PI&E plan is based on a needs assessment of the population to be served and an identification of actual or potential problem areas (i.e., demographics and health status variables, public perceptions and knowledge of EMS, type and scope of existing PI&E programs). There is an established mechanism for the provision of appropriate and timely release of information on EMS-related events, issues and public relations (damage control). The lead agency dedicates staffing and funding for these programs, which are directed at both the general public and EMS providers. The lead agency enlists the cooperation of other public service agencies in the development and distribution of these programs, and serves as an advocate for legislation that potentially results in injury/illness prevention.

Status

EMSA has been involved in promoting injury prevention and public information programs in EMS since 1991, with the inception of the EMS Partnership in Injury Prevention program, through funding from Office of Traffic Safety (OTS). As part of this program, EMSA produced a Pedestrian Safety Plan, which received a Traffic Safety award. EMSA requires local EMS agencies to include public information, education and injury control objectives in their EMS plans, and has provided funding through PHHS block grants for these objectives. These projects have included bicycle safety, pedestrian safety, seatbelt and helmet usage, impaired driving, speeding reduction, drowning prevention, falls prevention for the elderly, violence prevention, first aid and CPR training, health and safety training for students, safety fairs, disaster preparation, critical stress debriefing, and grief support.

There have been a number of excellent programs developed locally by various groups including Emergency Nurses Association (ENA) and the Eliminating Preventable Injuries of Children (EPIC) program in San Diego. These programs have had significant successes despite having to overcome formidable obstacles. A number of LEMSAs and providers have participated in NHTSA's PIER training program. OTS recently funded an additional epidemiologist at the DHS Injury Prevention and Control Program.

EMSA has provided block grant funding for EMS agencies to increase education and awareness programs in EMS in their communities, including appropriate use of 911 and the role of EMS personnel. EMSA has included both prevention and public education as priorities in their strategic plan and recently in the EMS Vision project. In addition, through its funding of the poison centers, EMSA has indirectly participated in public education related to those services.

Despite these notable accomplishments, there is no formal program for public information or education at EMSA. There are no personnel resources assigned and there is no permanent funding. In addition, the DHS has developed a state injury prevention plan, whose objectives have been accomplished, and which will soon be revised with assistance from the OTS. There is no association with the DHS Epidemiology and Prevention Injury Control Program and EMSA.

EMSA has been involved in a number of bystander care related programs including one of the earliest lay Automated External Defibrillation (AED) programs in the country, and has established medical training standards for child care workers, bus drivers, police, fire fighters and lifeguards.

Recommendations

- , **The prevention component of the state EMS plan should be developed in coordination with other state agencies that have existing prevention programs.**
- , EMSA should use its web site to serve as a clearinghouse for prevention programs including linkages to other web sites.
- , **Continue to seek funding sources for statewide and local prevention programs including funding for research to establish the effectiveness of such programs.**
- , Ensure that adequate personnel and funding resources are assigned to public information, education and prevention tasks at EMSA.
- , EMSA should cooperate with the DPH Injury Prevention and Control Plan to ensure coordination of injury prevention activities.

H. MEDICAL DIRECTION

Standard

EMS is a medical care system that involves medical practice as delegated by physicians to non-physician providers who manage patient care outside the traditional confines of office or hospital. As befits this delegation of authority, the system ensures that physicians are involved in all aspects of the patient care system. The role of the State EMS Medical Director is clearly defined, with legislative authority and responsibility for EMS system standards, protocols and evaluation of patient care. A comprehensive system of medical direction for all out-of-hospital emergency medical care providers (including BLS) is utilized to evaluate the provision of medical care as it relates to patient outcome, appropriateness of training programs and medical direction. There are standards for the training and monitoring of direct medical control physicians, and statewide, standardized treatment protocols. There is a mechanism for concurrent and retrospective review of out-of-hospital emergency medical care, including indicators for optimal system performance. Physicians are consistently involved and provide leadership at all levels of quality improvement programs (local, regional, state).

Status

The State of California has been without EMS physician leadership more than 50% of the time during the past 19 years. Fortunately, the EMS Authority has recently taken efforts to obtain the Health and Safety Code mandated physician leadership through consultant physicians. While these efforts are in the right direction, they are inadequate to supplant the role and responsibilities of a State EMS Medical Director.

No formal standing medical committee is available to advise the EMSA or EMS Commission. The EMSA Scope of Practice Committee is charged with review and approving any changes to the paramedic scope of practice only. No statewide minimum scope of practice has been established for EMT-I or EMT-II providers. No statewide minimum patient care standards, treatment protocols or triage guidelines exist for any level of EMS provider.

LEMSA medical directors determine the current scope of and privilege to practice in their region for all EMT-I, EMT-II and Paramedic providers. Many LEMSAs medical directors have established comprehensive medical oversight programs and policies including the formation of Emergency Medical Care committees to advise the LEMSAs medical director. Significant variation exists between LEMSAs regarding patient care protocols and an EMS provider's scope of practice. Of more concern is the lack of standard qualifications, commitment, compensation and involvement of the medical director in LEMSAs decision making. Additionally, the LEMSAs medical directors' role and responsibilities for dispatch, disaster planning, injury control, prevention and other public health functions are often ambiguous and inconsistent.

Training, standards and medical oversight of base physician online medical control vary by LEMSAs.

No resources are available to orient or prepare a physician for their role as a LEMSA or provider agency medical director.

No evidence exists of statewide physician oversight of concurrent or retrospective review of out-of-hospital emergency medical care, the establishment of optimal system performance indicators or ongoing quality improvement programs.

Individual LEMSA medical directors have established local centers of excellence in the delivery of out of hospital care. As a group, the EMS Medical Directors Association of California is made up of committed, expert EMS physicians who are an underutilized resource by the EMSA.

Recommendations

- , **The position of the state EMS medical director should be created with a clearly defined role and legislative authority and responsibility for EMS system standards, protocols and evaluation of patient care. Appropriate qualifications, selection process and compensation must accompany this new position.**
- , **A standing medical advisory committee should be established. The EMDAC is an excellent source of potential physician members. Committee members should be compensated for their time and expertise.**
- , **A statewide minimum scope of practice should be established for all levels of EMS providers.**
- , **Statewide minimum patient care standards, treatment protocols and triage guidelines should be established for all levels of EMS providers.**
- , LEMSA medical directors should have the authority to grant the privilege of practice to all EMS providers in their region.
- , A process should exist that allows a LEMSA medical director to petition EMSA to enhance the scope of practice of EMS providers in their region.
- , Standards should be developed for LEMSA and provider agency medical directors, online medical control base physicians, and Mobile Intensive Care Nurses (MICNs).
- , The role and authority of the LEMSA medical director should be clarified and defined by the EMSA.
- , **EMSA should define a mechanism to provide physician oversight to review patient care, establish performance indicators and development of ongoing quality improvement programs in the state EMS plan.**

- , EMSA should develop or make available resources that orient, prepare and foster a physician's involvement in California EMS.**
- , Medical oversight and patient care standards should be developed for interfacility transports.**

I. TRAUMA SYSTEMS

Standard

To provide a quality, effective system of trauma care, each State must have in place a fully functional EMS system; trauma care components must be clearly integrated with the overall EMS system. Enabling legislation should be in place for the development and implementation of the trauma care component of the EMS system. This should include trauma center designation (using ACS-COT, ACEP, APSA-COT and/or other national standards as guidelines), triage and transfer guidelines for trauma patients, data collection and trauma registry definitions and mechanisms, mandatory autopsies and quality improvement for trauma patients. Information and trends from the trauma registry should be reflected in PIER and injury prevention programs. Rehabilitation is an essential component of any statewide trauma system and hence these services should also be considered as part of the designation process. The statewide trauma system (or trauma system plan) reflects the essential elements of the Model Trauma Care System Plan.

Status

The State of California has recently promulgated comprehensive regulations concerning the California trauma system. These regulations are to be implemented within each LEMSA over the next two years unless that LEMSA has a comprehensive trauma plan already in place. These new regulations cover trauma center designation; trauma center criteria for four adult levels; pediatric trauma center criteria; data collection; trauma system evaluation; quality improvement and inter-facility transfer of patients. These criteria bear close resemblance to the national criteria developed by the Committee on Trauma of the American College of Surgeons but allow for additional criteria by the LEMSA should they wish to meet local system needs. The regulations call for one Level I or II center for each 350,000 population served with mandated coordination with neighboring trauma systems. The regulations cover trauma triage criteria for both adult and pediatric patients, linkage with rehabilitation facilities; provide data collection definitions and a quality improvement process. The elements of the trauma registry are outlined. There is the requirement for a trauma registry and this is protected under Evidence Code Section 1157.7. The reports of the trauma registry are not contained within the regulations but appropriate information could be incorporated into PIEP and injury prevention programs. There is no requirement for mandatory autopsies. There is a requirement within these new regulations that the LEMSA shall ensure that not only trauma centers, but other hospitals that treat trauma patients participate in the quality improvement process. This includes participation in the trauma system data management system but it is uncertain how this will be accomplished.

Special mention should be made of the efforts to meet the needs of pediatric patient emergency patient. Efforts have been made to classify emergency facilities as to their capability to manage emergency pediatric patients and then to ensure that appropriate patients that access the EMS system are channeled to these centers to optimize patient outcome. This includes the development of equipment lists for emergency facilities and for intensive care units.

While the new trauma system regulations are excellent, there are system wide deficiencies which may make the coordinated development of a statewide trauma system difficult. This includes current lack of a statewide trauma registry, limited state staff with clinical expertise for trauma system coordination, no statewide multidisciplinary trauma committee and no mechanism to translate trauma system QI findings to statewide policy changes (e.g., triage and transport protocols).

Recommendations

- , Mandatory autopsies for all trauma deaths with incorporation of data from such autopsies into the trauma registry.
- , Information and trends developed from the trauma registry should be utilized in PIER and injury prevention programs.
- , **Funding should be ensured that the components of the new regulations can all be implemented by both the EMSA and the LEMSA to ensure that a true statewide system plan can be realized. This includes support that will be required for optimal management and utilization of the data systems at both state and LEMSA levels.**
- , Mechanisms should be delineated to ensure that data on trauma patients from all hospitals that deliver care to these patients must be entered into the LEMSA and state trauma registry and that this is managed in a confidential manner.

J. EVALUATION

Standard

A comprehensive evaluation program is needed to effectively plan, implement and monitor a statewide EMS system. The EMS system is responsible for evaluating the effectiveness of services provided victims of medical or trauma related emergencies, therefore the EMS agency should be able to state definitively what impact has been made on the patients served by the system. A uniform, statewide out-of-hospital data collection system exists that captures the minimum data necessary to measure compliance with standards (i.e., a mandatory, uniform EMS run report form or a minimum set of data that is provided to the state); data are consistently and routinely provided to the lead agency by all EMS providers and the lead agency performs routine analysis of this data. Pre-established standards, criteria and outcome parameters are used to evaluate resource utilization, scope of services, effectiveness of policies and procedures, and patient outcome. A comprehensive, medically directed, statewide quality improvement program is established to assess and evaluate patient care, including a review of process (how EMS system components are functioning) and outcome. The quality improvement program should include an assessment of how the system is currently functioning according to the performance standards, identification of system improvements that are needed to exceed the standards and a mechanism to measure the impact of the improvements once implemented. Patient outcome data is collected and integrated with health system, emergency department and trauma system data; optimally there is linkage to data bases outside of EMS (such as crash reports, FARS, trauma registry, medical examiner reports and discharge data) to fully evaluate quality of care. The evaluation process is educational and quality improvement/system evaluation findings are disseminated to out-of-hospital emergency medical care providers. The lead agency ensures that all quality improvement activities have legislative confidentiality protection and are non-discoverable.

Status

Accurate and timely data are imperative to know definitively the status of an EMS system. The huge landmass and population, varied geography and population densities, number of patient care contacts, EMS providers, hospitals and counties make statewide EMS evaluation an intimidating task. EMSA does have the legislative authority and responsibility to carry out this task. Unfortunately, no comprehensive statewide plan or program exists for EMS system evaluation, quality improvement, data collection or data utilization. Thus, even current State EMS system performance guidelines (e.g., response time criteria) are not being scrutinized. Current statewide EMSA quality improvement tasks are delegated to one employee.

The “Shaping the Future of EMS in California” Vision process has identified areas of improvement and an approach to resolve this information deficit. Special projects are currently underway in Mt. Valley and Sierra-Sacramento Valley EMS systems.

LEMSAs are required to establish a regional QI program for all provider agencies and base hospitals and report their local EMS system evaluation to the state. Many LEMSAs have developed

sophisticated, comprehensive, computerized information systems that are exemplary in their ability to monitor and evaluate their local EMS system. However, submission of data to a central state agency is infrequent and the little information received by the state is not compiled or analyzed.

A minimum statewide patient care data set does exist for EMT-II and paramedic providers but its use varies by LEMSA. More disconcerting is the common practice that the patient care record is not left at the receiving hospital when the patient is delivered. Vital prehospital patient care information may be lost to the emergency department and subsequent care givers.

With few exceptions, data linkages do not exist among PSAPs, dispatch communication centers, EMS responders and hospitals. Access and integration with other information systems (e.g., hospital discharge and OSHPD data, coroner and CHP crash reports) are rare.

Although quality improvement activities do have confidentiality and disclosure protection under state law, it does not extend to EMS providers. Thus, receiving hospitals are often reluctant to disclose patient outcome data to a LEMSA. Also, hospitals are reluctant to allow a LEMSA to evaluate its ED capacity and other in-hospital resources.

A statewide trauma registry is required by new trauma regulations. Implementation and integration of the trauma registry into a coordinated state EMS information program has yet to be realized. Not surprisingly then, the identification of possible statewide injury prevention programs or the measurement of effectiveness of current local injury control and prevention programs is not possible.

Formal research studies are considered the pinnacle of the evaluation process. EMSA has few dollars allocated to fund research. Additionally, no standard process exists to obtain statewide human subject review approval for a proposed research study.

Recommendations

- , **Develop a comprehensive, medically directed statewide quality improvement program to evaluate patient care processes and outcomes.**
- , **Develop a statewide integrated information system (as described in the Vision document) that will have the capability to monitor, evaluate and elucidate emergency medical services and trauma care in California.**
- , **Ensure the design capability for linkages of the statewide integrated information system to other public and private data systems.**
- , **Allocate personnel and resources to implement the statewide integrated information system including necessary technical assistance, materials and funding to LEMSAs.**

- , Enforce the use of a uniform prehospital data set consistent with the NHTSA Uniform Prehospital Data Set. Mandate submission of an agreed upon, timely, limited, uniform, common language data set from the LEMSAs to the EMSA.
- , Seek ways to improve the number of completed patient care records that are delivered to the ED staff upon patient arrival with a goal of 98% compliance.
- , Request the NHTSA to conduct their Leadership Workshop on Quality Improvement for EMS Systems in California.
- , **The EMSA should write, and help shepherd through the legislative process, legislation to assure confidentiality and non-discoverability of EMS and trauma records and EMS provider protection while participating in EMS QI activities.**
- , Promote, support and reduce barriers to performing EMS research in California. Vigorously develop a statewide human subject review approval process for out-of-hospital research.

K. DISASTER SYSTEMS

Status

Although no specific standard exists concerning disaster management in the NHTSA EMS Assessment Program, the TAT was requested to review and comment on this element. California has much potential for both multi-casualty incidents and disaster scenarios within its borders. The etiology of these incidents could be both natural such as flooding, fog, or earthquake or man-made such as biological terrorism.

Emergency preparedness is a component of the California EMS plan and a proscribed element in the EMS law. The EMSA has developed a Disaster Medical Services Division and allocated resources to develop a response system organizational structure and perform state disaster/health resource management. Such a standardized emergency management system is being used to facilitate the flow of information and resources, allow for the rapid mobilization, deployment and tracking of resources and improve coordination among agencies. The State of California Office of Emergency Services has divided the state into six mutual aid and administrative regions.

Initiatives in a coordinated EMS disaster response in California began following the Loma Prieta earthquake. This has led to an impressive, progressive improvement in response capabilities. Lessons learned include the need to request early assistance and preplan for home based patients with special needs. The hospitals today are operating at a much higher occupancy and it will not be easy to evacuate hospitals within the disaster area, manage disaster casualties and yet act as a safety net to those special needs patients who may require further in-hospital care. Reimbursement for services and supplies - EMS and hospital- has been a contentious issue during and after these disasters. Unresolved issues include status of a California master mutual aid agreement and the planning and preparedness within the non-government healthcare system.

SB 1953 mandates either retrofitting or closing hospital acute care facilities by 2008 if they do not meet certain seismic non-collapse requirements. This was initiated following an estimate that there could be as much as a 50% loss of hospital beds should a major earthquake occur in California. Issues such as communications, DMAT team activation, funding and the special requirements of a biological or chemical disaster are of concern.

The TAT was impressed by the depth of preparation that has already occurred within the state.

Recommendations

- , The EMSA should continue to develop emergency medical and health disaster contingency plans..
- , **The EMSA should develop a statewide mutual aid plan for mobilization of EMS and ambulance resources.**

- , **The EMSA should develop a uniform EMS disaster communication system to ensure that communications be maintained during a disaster.**
- , The EMSA should develop a system to ensure that EMS resources utilized for disaster response be reimbursed.

L. CURRICULA VITAE

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American Board of Emergency Medicine, Diplomate
American College of Emergency Physicians, Fellow, Member, EMS Committee
National Association of EMS Physicians
Secretary/Treasurer
Member, writing panel for developing curriculum for EMS medical directors
National Association of State EMS Directors
Chairman, Public Access Defibrillation Committee
Chairman, Communications Committee
American Trauma Society
Board of Directors
US Department of Transportation, NHTSA
Member, Task for developing the EMS Agenda for the Future
Member, National Review Committee for the Development of the EMT Paramedic and EMT
Intermediate Curricula
Member, EMS and Managed Care Task Force
US Department of Health and Human Services, Health Care Finance Administration
Member, Negotiated Rulemaking Committee for Ambulance Fees
Chair, Medical Working Group
University of Maryland Medical System
Board of Directors
Commission on Accreditation of Air Medical Services (former)
National Institute of Health, National Heart Attack Alert Program (former)
Member, Access to Care Task Force
USDOT, NHTSA, Emergency Medical Services, Technical Assistance Team, Member

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ORGANIZATIONS/APPOINTMENTS

American College of Surgeons

Fellow

Canadian College of Surgeons

Fellow

American Association for the Surgery of Trauma

Fellow

Society of Critical Care Medicine

American Society of Testing and Materials (EMS)

American Medical Association

Boston Surgical Society

Massachusetts Medical Society

American College of Emergency Physicians

Society of Academic Emergency Medicine

National Association of EMS Physicians

International Society of Air Medical Systems

Eastern Association for the Surgery of Trauma

Massachusetts Committee on Trauma, Chairman

Region I Committee on Trauma

American College of Surgeons, Chairman

Physician Directors EMS Region IV, Massachusetts

Commonwealth of Massachusetts, Office of Emergency Medical Services,

Trauma Medical Director and Chair, Trauma Systems Committee

Boston Medflight Helicopter, Inc., Chairman of the Board

Massachusetts Seat Belt Coalition

Board of Advisors

USDOT, NHTSA, Participating Member, "EMS Agenda for the Future"

USDOT, NHTSA, EMS Technical Assistance Program,

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ORGANIZATIONS/APPOINTMENTS

National Registry of Emergency Medical Technicians

Board of Directors Representing NASEMSD

Planning and Data Committee,

Treasurer

Policy and Procedures Committee,

Vice Chair, Board of Directors

Standard Settings, EMT-Basic Examination technicians

EMT-Basic Transition Curriculum Group

AD HOC Committee on Americans with Disabilities

EMT-P, EMT-B Practice Analysis Task Force

NHTSA

Member, Uniform Prehospital Data Set Task Force and Consensus Conference

Invited Participant, NHTSA Workshop on Methodologies for Measuring Morbidity and Outcomes
in EMS

Division of Trauma and EMS, HRSA

Trauma Data Set Committee

Task Force "Evaluation Trauma Systems"

Chair National EMS and Education Practice Blueprint

National Association of State EMS Directors

Past Secretary

Legal Recognition Committee

Chair, National Registry Committee

Chair, Data Committee

President

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ORGANIZATION/APPOINTMENTS

American Society for Public Administration
Member

Idaho Preventative Health Advisory Committee
Member

National Association State Emergency Medical Services Directors
Member, Past Treasurer, President Elect

National Registry of EMTs
Advanced Level Representative, former EMT- Paramedic

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Visiting Instructor, Distance Education Program

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ORGANIZATIONS/APPOINTMENTS

National Association of State EMS Directors (1979-1996)
Past President
Past Chairman, Government Affairs Committee
National Association of EMS Physicians, Member
American Medical Association,
Commission on Emergency Medical Services (Former)
American Trauma Society
Founding Member, Past Speaker House of Delegates
ASTM Committee F.30 on Emergency Medical Services
Institute of Medicine/National Research Council
Pediatric EMS Study Committee, Member
Committee Studying Use of Heimlich Maneuver on Near Drowning Victims, Member
World Association on Disaster and Emergency Medicine
Executive Committee, Former Member
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Wisconsin State Emergency Medical Services, Physician Advisory Committee
American College of Emergency Physicians
Wisconsin Chapter, Member
American Medical Association, Member
Milwaukee County Traffic Safety Commission, Member
Milwaukee County Association of Fire Chiefs, Associate Member
Milwaukee County Council of Emergency Medical Services, Member
City of Milwaukee Ambulance Service Board, Member
Milwaukee County EMS, Online Base Station Physician
National Registry of Emergency Medical Technicians, Board of Directors
International Association of Fire Chiefs, Physicians Advisory Panel
Wisconsin EMS Association, Member
Association for the Advancement of Automotive Medicine, Member
Milwaukee County Medical Society, EMS Committee Member
State Medical Society of Wisconsin, Member
Society for Academic Emergency Medicine, Member
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